

## Nuclear Regulatory Commission

## § 71.64

this section, and subsequent application of the immersion test in § 71.73(c)(5).

(g) Packages containing uranium hexafluoride only are excepted from the requirements of paragraph (b) of this section provided that:

(1) Following the tests specified in § 71.73 (“Hypothetical accident conditions”), there is no physical contact between the valve body and any other component of the packaging, other than at its original point of attachment, and the valve remains leak tight;

(2) There is an adequate quality control in the manufacture, maintenance, and repair of packagings;

(3) Each package is tested to demonstrate closure before each shipment; and

(4) The uranium is enriched to not more than 5 weight percent uranium-235.

[60 FR 50264, Sept. 28, 1995; 61 FR 28724, June 6, 1996, as amended at 69 FR 3794, Jan. 26, 2004]

### § 71.57 [Reserved]

### § 71.59 Standards for arrays of fissile material packages.

(a) A fissile material package must be controlled by either the shipper or the carrier during transport to assure that an array of such packages remains subcritical. To enable this control, the designer of a fissile material package shall derive a number “N” based on all the following conditions being satisfied, assuming packages are stacked together in any arrangement and with close full reflection on all sides of the stack by water:

(1) Five times “N” undamaged packages with nothing between the packages would be subcritical;

(2) Two times “N” damaged packages, if each package were subjected to the tests specified in § 71.73 (“Hypothetical accident conditions”) would be subcritical with optimum interspersed hydrogenous moderation; and

(3) The value of “N” cannot be less than 0.5.

(b) The CSI must be determined by dividing the number 50 by the value of “N” derived using the procedures specified in paragraph (a) of this section.

The value of the CSI may be zero provided that an unlimited number of packages are subcritical, such that the value of “N” is effectively equal to infinity under the procedures specified in paragraph (a) of this section. Any CSI greater than zero must be rounded up to the first decimal place.

(c) For a fissile material package which is assigned a CSI value—

(1) Less than or equal to 50, that package may be shipped by a carrier in a nonexclusive use conveyance, provided the sum of the CSIs is limited to less than or equal to 50.

(2) Less than or equal to 50, that package may be shipped by a carrier in an exclusive use conveyance, provided the sum of the CSIs is limited to less than or equal to 100.

(3) Greater than 50, that package must be shipped by a carrier in an exclusive use conveyance, provided the sum of the CSIs is limited to less than or equal to 100.

[60 FR 50264, Sept. 28, 1995, as amended at 69 FR 3795, Jan. 26, 2004]

### § 71.61 Special requirements for Type B packages containing more than $10^5 A_2$ .

A Type B package containing more than  $10^5 A_2$  must be designed so that its undamaged containment system can withstand an external water pressure of 2 MPa (290 psi) for a period of not less than 1 hour without collapse, buckling, or inleakage of water.

[69 FR 3795, Jan. 26, 2004]

### § 71.63 Special requirement for plutonium shipments.

Shipments containing plutonium must be made with the contents in solid form, if the contents contain greater than 0.74 TBq (20 Ci) of plutonium.

[69 FR 3795, Jan. 26, 2004]

### § 71.64 Special requirements for plutonium air shipments.

(a) A package for the shipment of plutonium by air subject to § 71.88(a)(4), in addition to satisfying the requirements of §§ 71.41 through 71.63, as applicable, must be designed, constructed, and prepared for shipment so that under the tests specified in—

## § 71.65

(1) Section 71.74 (“Accident conditions for air transport of plutonium”)—

(i) The containment vessel would not be ruptured in its post-tested condition, and the package must provide a sufficient degree of containment to restrict accumulated loss of plutonium contents to not more than an A<sub>2</sub> quantity in a period of 1 week;

(ii) The external radiation level would not exceed 10 mSv/h (1 rem/h) at a distance of 1 m (40 in) from the surface of the package in its post-tested condition in air; and

(iii) A single package and an array of packages are demonstrated to be subcritical in accordance with this part, except that the damaged condition of the package must be considered to be that which results from the plutonium accident tests in § 71.74, rather than the hypothetical accident tests in § 71.73; and

(2) Section 71.74(c), there would be no detectable leakage of water into the containment vessel of the package.

(b) With respect to the package requirements of paragraph (a), there must be a demonstration or analytical assessment showing that—

(1) The results of the physical testing for package qualification would not be adversely affected to a significant extent by—

(i) The presence, during the tests, of the actual contents that will be transported in the package; and

(ii) Ambient water temperatures ranging from 0.6 °C ( + 33 °F) to 38 °C ( + 100 °F) for those qualification tests involving water, and ambient atmospheric temperatures ranging from –40 °C (–40 °F) to + 54 °C ( + 130°F) for the other qualification tests.

(2) The ability of the package to meet the acceptance standards prescribed for the accident condition sequential tests would not be adversely affected if one or more tests in the sequence were deleted.

## § 71.65 Additional requirements.

The Commission may, by rule, regulation, or order, impose requirements on any licensee, in addition to those established in this part, as it deems necessary or appropriate to protect public health or to minimize danger to life or property.

## 10 CFR Ch. I (1–1–16 Edition)

### Subpart F—Package, Special Form, and LSA-III Tests<sup>2</sup>

#### § 71.70 Incorporations by reference.

(a) The materials listed in this section are incorporated by reference in the corresponding sections noted and made a part of the regulations in part 71. These incorporations by reference were approved by the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. These materials are incorporated as they exist on the date of the approval. A notice of any changes made to the material incorporated by reference will be published in the FEDERAL REGISTER, and the material must be available to the public. The materials can be examined, by appointment, at the NRC’s Technical Library, which is located at Two White Flint North, 11545 Rockville Pike, Rockville, Maryland 20852; telephone: 301-415-7000; email: [Library.Resource@nrc.gov](mailto:Library.Resource@nrc.gov). The materials are also available from the sources listed below. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 1-202-741-6030 or go to <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

(b) International Organization for Standardization, ISO Central Secretariat, Chemin de Blandonnet 8 CP 401, 1214 Vernier, Geneva, Switzerland; email: [central@iso.org](mailto:central@iso.org); phone: + 41 22 749 01 11; Web site: <http://www.iso.org>.

(1) ISO 9978:1992(E), “Radiation protection—Sealed radioactive sources—Leakage test methods,” First Edition (February 15, 1992), incorporation by reference approved for § 71.75(a), is available for purchase from the American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, NY 10036, 212-642-4900, <http://www.ansi.org>, or [info@ansi.org](mailto:info@ansi.org).

(2) ISO 2919:1999(E), “Radiation protection—Sealed radioactive sources—General requirements and classification,” Second Edition (February 15,

<sup>2</sup>The package standards related to the tests in this subpart are contained in subpart E of this part.